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09/701,658	11/30/2000	Carsten Bingel	732/980(26	5708

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EXAMINER	
LEE, RIP A	

ART UNIT	PAPER NUMBER
1713	5

DATE MAILED: 02/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/701,658	Applicant(s) BINGEL, ET AL.	
	Examiner Rip A. Lee	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-15* is/are rejected.

7)☒ Claim(s) *10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 10 is objected to because of the following informalities: Change "RI" to "R^1" (see page 4, line 11).

2. Claim 11 is objected to because of the following informalities: Change "CH" to "CH_2" (see page 6, line 5).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 9 and 11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for oxygen-, nitrogen-, and possibly sulfur-containing monochlorozirconium compounds, does not reasonably provide enablement for phosphorus-containing ligands, particularly, those of type $P(O)R^3$. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. There is no teaching of such an embodiment within the specification other than iteration of the claims.

5. Claims 9 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nitrogen-containing ligands, does not reasonably provide enablement for nitrogen-containing ligands of claimed formula $[N(R^3)_2]_m$. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. According to the definition of group $[Y\text{-}R^3]_m$, the fragment Y represents NR^3. As such, the group can be rewritten $[N(R^3)_2]_m$, as shown above. Thus, *both* R^3 groups on the nitrogen atom must conform to the definition recited in the claims. Conspicuously absent in the specification is any teaching of nitrogen compounds which adhere to the claimed formula. As a result, sufficient enablement of the claimed compounds is dubious.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such languag

(a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 9 and 10 recite the broad recitation, "radicals R^1 and the atoms of the cyclopentadienyl ring which connect them form a C_{4-24} ring system," and the claim also recites, "rings are substituted in such a way that they form an indenyl ring," which is the narrower statement of the range/limitation.

8. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim provides for the use of a catalyst, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim15 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmidt *et al.*

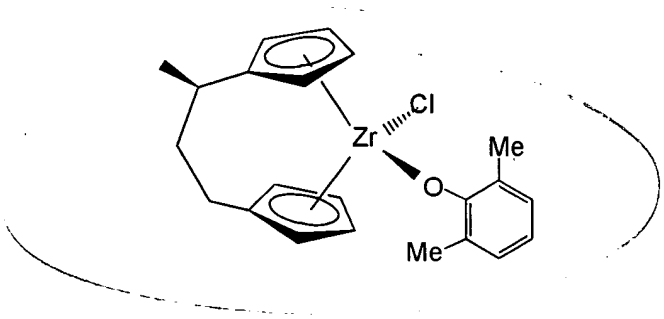
Schmidt *et al.* report the synthesis and characterization of $Me_2Si(3\text{-}t\text{-}Bu\text{-}C_5H_3)_2ZrCl$-binaphtholate. As seen from the crystal structure in Figure 1, the metallocene contains the requisite dimethylsilylene-bridged cyclopentadienyl ligands, group 4 transition metal, chloride, and aryloxy components recited in the claims of the present invention.

11. Claims 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 98/56831 to Munck *et al.*

The prior art of Munck *et al.* teaches a catalyst sytem for polymerization of olefins comprising a metallocene of general formula $L_xM(Hal)(NR_2)_{z\text{-}y}$ where M is a group 4 metal, Hal is chloride, R is a saturated or unsaturated hydrocarbon group containing no more than 8 carbon atoms (claim 16). The group L_x is cyclopentadienyl or indenyl (claim 17), x = 2 (claim 18), and they are bridged (claim 19) by a dimethylsilylene group (claim 23). Thus, said metallocene meets the compositional requirements of the compound of the present invention.

12. Claims 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Dormand *et al.*

Dormand *et al.* disclose a bridged aryloxyzirconocene monohalide of formula (XII), redrawn for clarity below.



Clearly, the metallocene satisfies all the compositional requirements of the compound of the present invention.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

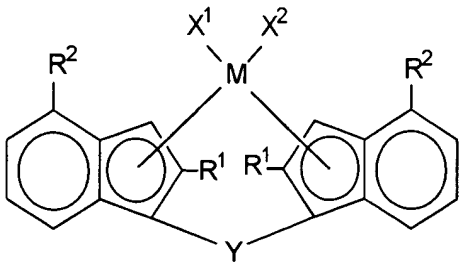
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 629,632 to Fukuoka *et al.*

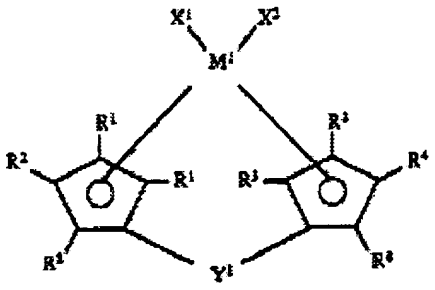
Claim 1 of Fukuoka *et al.* discloses a transition metal compound of general formula shown below,



where M is a group 4 metal, Y is a divalent silicon-containing group, and X^1 and X^2, which may be identical or different, are each a halogen, an oxygen-containing group, and a sulfur-containing group. A catalyst is prepared using the compound of claim 1 and a co-catalyst (claim 2). Furthermore, the catalyst components are supported on a carrier (claim 4). The catalyst is used to prepare polyolefins. Although no single embodiment encompassing all the claimed structural features appears in the examples of the reference, it would have been obvious to one having ordinary skill in the art to prepare the claimed compounds since their structures lie within the generic disclosure of Fukuoka *et al.* Therefore, one with ordinary skill in the art would expect such compounds to make equally useful catalysts for making polyolefins.

16. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,795,838 to Tsutsui *et al.*

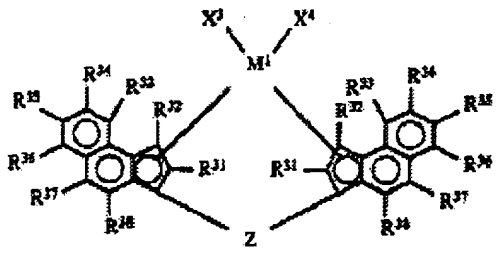
Claim 14 of Tsutsui *et al.* discloses a transition metal compound of general formula (Ia) shown below,



where M is a group 4 transition metal, Y is a divalent silicon-containing group, R^1, R^2, R^3, and R^4 may be bonded with each other to form a ring, and X^1 and X^2 may be the same or different from each other, are each a hydrocarbon group, an oxygen-containing group, a sulfur-containing grou, a hydrogen atom, or a halogen atom. It can be seen from structure (Ia) of claim 14 that the

definition, "R^1, R^2, R^3, and R^4 may be bonded with each other to form a ring" implies an bridged *bis*-indenyl ligand.

A further structure (Ic), disclosed in claim 14, contains bridged benzo[*e*]indenyl ligands:



where M is a group 4 transition metal, Z is dialkylsilyl, X3 and X4 may be the same as or different from each other, and are each hydrogen, a halogen atom, or an aryloxy group.

Polymerization of olefin monomers takes place in the presence of a catalyst comprising the metallocenes and a co-catalyst wherein the metallocene is supported on a fine particle carrier (claim 1). Although no single embodiment encompassing all the claimed structural features appears in the examples of the reference, it would have been obvious to one having ordinary skill in the art to prepare the claimed compounds since their structures lie within the generic disclosure of Fukuoka *et al.* Therefore, one with ordinary skill in the art would expect such compounds to make equally useful catalysts for making polyolefins.

17. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka *et al.* or Tsutsui *et al.* in view of Dormand *et al.*

The discussion of the disclosures of the prior art of Fukuoka *et al.*, Tsutui *et al.*, and Dormand *et al.* from paragraph 15, 16, and 12 of this office action, respectively, is incorporated here by reference. The Fukuoka *et al.* and Tsutui *et al.* references are silent with respect to the

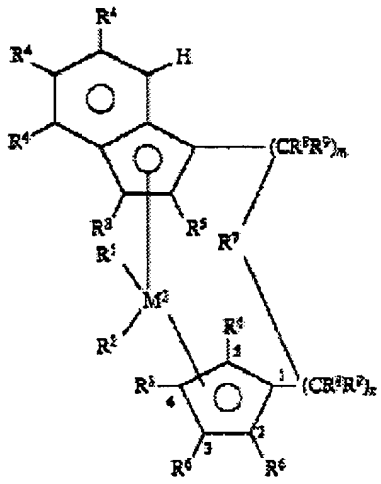
specific types of oxygen-containing group. Dormand *et al.* shed light on the identity of said ligand. The inventors disclose the structure of a bridged 2,6-dimethylphenoxyzirconocene monochloride complex. Thus, it would have been obvious to one having ordinary skill in the art to prepare dimethylsilylene *bis*-indenyl zirconocenes as per Fukuoka *et al.* or Tsutsui *et al.*, using the oxygen containing ligand disclosed in Dormand *et al*, and one with ordinary skill in the art would have expected such an embodiment to act successfully as a catalyst precursor.

18. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka *et al.* or Tsutsui *et al.* in view of Repo *et al.*

The discussion of the disclosures of the prior art of Fukuoka *et al.* and Tsutui *et al.* from paragraph 15 and 16 of this office action, respectively, is incorporated here by reference. The references are silent with respect to specific types of oxygen-containing group. Repo *et al.* shed light on the identity of said ligand. The inventors disclose a substituted phenoxy monohalide zirconocene as a catalyst component for polymerization of olefins. With the two references at hand, it would have been obvious to one having ordinary skill in the art to prepare phenoxy monochloride zirconocenes having the bridged *bis*-indenyl ligand set, and one with ordinary skill in the art would have expected such an embodiment to act successfully as a catalyst precursor.

19. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,543,373 to Winter *et al.*

Winter *et al.* teach metallocenes of formula (I), shown below.



The metal M^2 is a group 4 metal, R^1 and R2 are identical or different and are a C_6-C_{10} aryloxy group or a halogen atom, R^7 is $-M^1(R^{11})_2-$, in which M^1 is silicon and R^{11} is a C_1-C_{20} alkyl group, and integer *m* is zero (claim 1). Said compounds, in conjunction with a co-activator, are used to make a catalyst for polymerization of olefins. The catalyst is also supported (Example U). Although no single embodiment encompassing all the claimed structural features appears in the examples of the reference, it would have been obvious to one having ordinary skill in the art to prepare the claimed compounds since their structures lie within the generic disclosure of Winter *et al.* Therefore, one with ordinary skill in the art would expect such compounds to make equally useful catalysts for making polyolefins.

20. Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter *et al.* in view of Repo *et al.*

The discussion of the disclosures of the prior art of Winter *et al.* from paragraph 19 of this office action is incorporated here by reference. The reference is silent with respect to specific types of oxygen-containing group. Repo *et al.* shed light on the identity of said ligand. The inventors disclose a substituted phenoxy monohalide zirconocene as a catalyst component for polymerization of olefins. With the two references at hand, it would have been obvious to one having ordinary skill in the art to prepare phenoxy monochloride zirconocenes of Repo *et al.* having the bridged *bis*-indenyl ligand set of Winter *et al.*, and one with ordinary skill in the art would have expected such an embodiment to act successfully as a catalyst precursor.

21. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka *et al.* in view of Wochner *et al.*

Fukuoka *et al.* disclose compounds having the general formula described previously (*vide supra*). In the formula, X^1 and X^2 may be identical or different and are each a halogen atom or a C_1-C_{20} hydrocarbon group (claim 1). The reference is silent with respect to specific types of hydrocarbon group. Wochner *et al.* provide examples of monochloro monoalkyl zirconium complexes by disclosing the compound $Cp^*_2Zr(Cl)CH_2C(CH_3)_3$ and its bridged analogue, $C_2H_4(C_5Me_4)_2Zr(Cl)CH_2C(CH_3)_3$. With the two references at hand, it would have been obvious to one having ordinary skill in the art to prepare neopentyl monochloride zirconocenes of Wochner *et al.* having the bridged *bis*-indenyl ligand set of Fukuoka *et al.*, and one with ordinary

skill in the art would have expected such an embodiment to act successfully as a catalyst precursor.

22. Claims 11-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka *et al.* in view of Barriola *et al.*

Fukuoka *et al.* disclose compounds having the general formula described previously (*vide supra*). In the formula, X^1 and X^2 may be identical or different and are each a halogen atom or a C_1-C_{20} hydrocarbon group (claim 1). The reference is silent with respect to specific types of hydrocarbon group. Barriola *et al.* provide an example of monochloro monoalkyl zirconium complexes by dislcosing the bridged compound $(Me_2Si)_2(C_5H_3)_2Zr(Cl)CH_2C(Me)_2Ph$. With the two references at hand, it would have been obvious to one having ordinary skill in the art to prepare neophyl monochloride zirconocenes of Barriola *et al.* having the bridged *bis*-indenyl ligand set of Fukuoka *et al.*, and one with ordinary skill in the art would have expected such an embodiment to act successfully as a catalyst precursor.

23. Corrections were made in the information disclosure by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9310. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

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February 12, 2002